



DEFENSE INFORMATION SYSTEMS AGENCY
JOINT INTEROPERABILITY TEST COMMAND
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FORT HUACHUCA, ARIZONA 85613-7051

IN REPLY
REFER TO:

Networks, Transmission and
Integration Division (JTE)

17 October 2003

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Joint Interoperability Test Certification of Avaya MultiVantage S8700, DEFINITY G3R and G3SI Digital Switching Systems with Software Release R011.7585.7.0.2

References:

- (a) DOD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 11 January 2002
- (b) CJCSI 6212.01B, "Interoperability and Supportability of National Security Systems and Information Technology Systems," 8 May 2000

1. References (a) and (b) establish the Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification. Additional references are provided in enclosure 1.

2. The Avaya MultiVantage S8700 Digital Switching System with Software Release R011x.7585.7.0.2, hereafter referred to as the system under test (SUT), meets all of its critical interoperability requirements, and is certified as interoperable for joint use within the Defense Switched Network (DSN). The identified test discrepancies shown in enclosure 2 that remained open after software patches were applied and regression testing was completed have an overall minor operational impact. The Avaya DEFINITY G3R and G3SI digital switching systems employ the same software and trunk/line card hardware as the SUT; JITC analysis determined the G3R and G3SI to be functionally identical for interoperability certification purposes. The switching systems and their respective software releases covered under this certification are listed in table 1. The SUT was tested and met the critical interoperability requirements for the following DSN switch types: Small End Office, Private Branch Exchange (PBX) 1 and PBX 2. This certification expires upon changes that could affect interoperability, but no later than three years from the date of this memorandum.

3. This finding is based on interoperability testing conducted by the JITC. Testing was conducted at the JITC facility at Ft. Huachuca, AZ. The Certification Testing Summary (enclosure 2) documents the test results and describes the tested network and systems

JITC Memo, Networks, Transmission and Integration Division (JTE), Joint Interoperability Test Certification of Avaya MultiVantage S8700, DEFINITY G3R and G3SI Digital Switching Systems with Software Release R011.7585.7.0.2

configurations. System interoperability should be verified before deployment in an operational environment that varies significantly from the test environment.

4. The interoperability summary of the SUT is indicated in table 2. The interoperability status and criticality are listed in table 3, and the Exchange Requirements (ERs) and Functional Requirements (FRs) for the DSN are listed in table 4. The Avaya switch product line offers a Remote Switch Unit capability referred to as the Survivable Remote Processor Expansion Port Network. This product line also offers a Voice over Internet Protocol capability. Preliminary testing was performed on these capabilities, but neither is covered by this certification. Network Management (NM) capabilities of the SUT platform were tested in accordance with the DISA NS53 requirements as set forth in references (c) and (d). This reference requires that a switch provide NM capabilities via either ethernet, serial (EIA-232), or serial (X.25 or BX.25 variant). The SUT meets the NM requirements through the use of either serial (EIA-232) or Ethernet connections. The serial interface does not support alarm data. This interoperability test status is based upon evaluation of:

- a. The following network interfaces as specified in reference (e): DSN, Defense Red Switch Network Gateway, Tactical Network Gateway, North Atlantic Treaty Organization Gateway, and Public Switched Telecommunications Network or Commercial Network Gateway.
- b. The interface and signaling requirements for trunk/line interfaces, and interoperability ERs and FRs derived from references (f) and (g).
- c. The overall system interoperability performance derived from test procedures listed in reference (h).
- d. Review of Letters of Compliance submitted by Avaya.

Table 1. Certified Avaya DEFINITY Software Releases

Software Release	Software Medium	Switch Platform
R011x.7585.7.0.2 (See note)	Optical Disk	MultiVantage S8700
R011r.7585.7.0.2 (See note)	Optical Disk	DEFINITY G3R
R011i.7585.7.0.2 (See note)	PCMCIA	DEFINITY G3SI
Legend: PCMCIA – Personal Computer Memory Card International Association Note: The software is the same; however, Avaya distinguishes the different mediums and platforms by the 5 th character of the Software Release (e.g. x, r, i).		

JITC Memo, Networks, Transmission and Integration Division (JTE), Joint Interoperability Test Certification of Avaya MultiVantage S8700, DEFINITY G3R and G3SI Digital Switching Systems with Software Release R011.7585.7.0.2

Table 2. MultiVantage S8700, DEFINITY G3R and G3SI Digital Switching Systems Interoperability Summary

Network	Critical	Status	Remarks
DSN	Yes	Certified	<ul style="list-style-type: none"> - VoIP not certified - Certified as SMEO & PBX1 - RSU not certified - E1 CAS and CDC certified (DISN-E only) - The identified test discrepancies shown in enclosure (2) that remained open have an overall minor operational impact.
DRSN Gateway	Yes	Certified	- All critical requirements met
Tactical Gateway	No	Certified	- All critical requirements met
NATO Gateway	No	Not Tested	
Commercial Gateway	Yes	Certified	- All critical requirements met
Legend: CAS - Channel Associated Signaling CDC - Common Data Channel DISN-E - Defense Information System Network Europe DRSN - Defense Red Switch Network DSN - Defense Switched Network E1 - European Basic Rate (2.048 Mbps) Mbps - Megabits per second NATO - North Atlantic Treaty Organization PBX1 - Private Branch Exchange 1 RSU - Remote Switching Unit SMEO - Small End Office VoIP - Voice over Internet Protocol			

Table 3. Interoperability Status

Defense Switched Network	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	Yes	Certified	Met all critical ERs and FRs.
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	Yes	Certified	Met all critical ERs and FRs.
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP	Yes	Certified	Met all critical ERs and FRs.
	PCM-30 E1 CAS HDB3 MFR1	No	Certified	Met all ERs and FRs.
	PCM-24 T1 (B8ZS/ESF) ISDN PRI	Yes	Certified	Met all critical ERs and FRs. Full compliance to the ANSI T1.619a requirement not met. ¹ Operational impact is minor.
	Analog E&M Signaling Type I	No	Certified	Met all ERs and FRs.
	Line Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	TPC ISDN BRI ST and U Interface Q.931	Yes	Certified	Met all critical ERs and FRs. ISDN Supplemental Services ² and full compliance of DSN Announcements ³ not met. Operational impact is minor.
	TPC 2-Wire analog	Yes	Certified	Met all critical ERs and FRs. Full compliance of DSN Announcements ³ not met. Operational impact is minor.
	TPC 2-Wire Digital (Proprietary)	No	Certified	Met all ERs and FRs except for full compliance of DSN Announcements. ³ Operational impact is minor.
	Network Management Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP	No	Certified	Met all ERs and FRs.
	TPC EIA232 Asynchronous @ 9.6 kbps	No	Certified	Met all ERs and FRs.
	TPC X.25 or BX.25 Synchronous	No	Not Tested	

JITC Memo, Networks, Transmission and Integration Division (JTE), Joint Interoperability Test Certification of Avaya MultiVantage S8700, DEFINITY G3R and G3SI Digital Switching Systems with Software Release R011.7585.7.0.2

Table 3. Interoperability Status (continued)

Defense Red Switch Network Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	2-Wire Analog Loop	Yes	Certified	Met all critical ERs and FRs.
Tactical Network Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	No	Certified	Met all ERs and FRs.
	PCM-30 E1 HDB3 CAS MFR1	No	Certified	Met all ERs and FRs.
NATO Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	Analog E&M Signaling Type I	No	Certified	Met all ERs and FRs.
		No	Not Tested	
Commercial Network Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	Same Interfaces and Signaling as DSN	Yes	Certified	See note 4.

Legend:

10BaseT	- Ethernet Based Operation, Twisted Pair	GSTP	- Generic Switch Test Plan
AMI	- Alternate Mark Inversion	HDB3	- High Density Bi-polar Three
ANSI	- American National Standards Institute	IEEE	- Institute of Electrical and Electronic Engineering Inc.
B8ZS	- Bipolar Eight Zero Substitution	ISDN	- Integrated Services Digital Network
BRI	- Basic Rate Interface	kbps	- kilobits per second
CAS	- Channel Associated Signaling	Mbps	- Megabits per second
CAT	- Category	MFR1	- Multi-Frequency R1
DISN	- Defense Information Systems Network	NATO	- North Atlantic Treaty Organization
DP	- Dial Pulse	PCM-24	- Pulse Code Modulation 24 Channels
DSN	- Defense Switched Network	PCM-30	- Pulse Code Modulation 30 Channels
DTMF	- Dual Tone Multi-Frequency	PRI	- Primary Rate Interface
E1	- European Basic Rate (2.048 Mbps)	SF	- Superframe
E&M	- Ear and Mouth	ST	- ISDN BRI Four-Wire Interface
EIA	- Electronic Industries Alliance	SUT	- System Under Test
ERs	- Exchange Requirements	T1	- Digital Transmission Link level 1 (1.544 Mbps)
ESF	- Extended Superframe	TCP/IP	- Transmission Control Protocol/Internet Protocol
FRs	- Functional Requirements	TPC	- Twisted Pair Copper
GSCR	- Generic Switching Center Requirements	U	- ISDN BRI Two-Wire Interface

Notes:

- The SUT will not allow calls between unlike DSN service domains when resources are available. The SUT meets the minimum requirements defined in reference (g), and full compliance is not required until Oct 2003. The operational impact is minor.
- ISDN Supplemental Services currently not used in the DISN. The operational impact is none.
- Met all DSN Announcement requirements except for Isolation Code Announcement. The SUT provides this announcement only for precedence calls above ROUTINE. ROUTINE precedence calls receive a fast busy signal.
- The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" items listed in appendix E of the GSTP specified in tables 2-1 through 2-15 of the GSCR.

JITC Memo, Networks, Transmission and Integration Division (JTE), Joint Interoperability Test Certification of Avaya MultiVantage S8700, DEFINITY G3R and G3SI Digital Switching Systems with Software Release R011.7585.7.0.2

Table 4. Exchange and Functional Requirements

Defense Switched Network	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	<ul style="list-style-type: none">- MLPP- Hotline Services- System Interface<ul style="list-style-type: none">• Non-secure Voice and Data• Secure Voice and Data (STU-III and STE)• NX56 kbps and NX64 kbps Synchronous Data• Non-secure and Secure FAX• VTC• Alarms- Integrated Services Digital Network (<i>ISDN PRI only</i>)- Attendant Services¹- System Administration, Measurements, and Service Standards- Y2K (Rollover, Valid and Invalid Dates)- Screening, Zone Restriction, and DSN Access Restriction- Automated Message Accounting- Network Integration- Common Data Channel (<i>T1 and E1 CAS only</i>)- ANSI T1.619a (<i>T1 ISDN PRI</i>)
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP	
	PCM-30 E1 CAS HDB3 MFR1	
	PCM-24 T1 B8ZS/ESF ISDN PRI	
	Analog E&M Signaling Type 1	
	Line Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	TPC ISDN BRI ST and U Interface Q.931	<ul style="list-style-type: none">- MLPP- Hotline Services- ANSI T1.619a- ISDN Supplemental Services- Call Treatments- DSN Announcements- Attendant Services¹- EKTS- VTC- NX56 kbps and NX64 kbps Synchronous Data- Non-secure Voice and Data- Secure Voice and Data (STE)
	TPC 2-Wire analog	<ul style="list-style-type: none">- MLPP- Hotline Services- DSN Announcements- Traffic Measurements- Attendant Services¹- Call Treatments- Non-secure Voice and Data- Non-secure and Secure FAX- Secure Voice and Data (STU-III and STE)
TPC 2-Wire Digital and Analog (Proprietary)	<ul style="list-style-type: none">- MLPP- Hotline Services- DSN Announcements- Traffic Measurements- Attendant Services¹- Call Treatments- Non-secure Voice	

JITC Memo, Networks, Transmission and Integration Division (JTE), Joint Interoperability Test Certification of Avaya MultiVantage S8700, DEFINITY G3R and G3SI Digital Switching Systems with Software Release R011.7585.7.0.2

Table 4. Exchange and Functional Requirements (continued)

Defense Switched Network (continued)	Network Management Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP	- Automated Message Accounting - Traffic Measurements
	TPC EIA232 Asynchronous @ 9.6 kbps	- Alarms <i>(TCP/IP interface only)</i> - Man Machine Language
Defense Red Switch Network Gateway	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	TPC 2-Wire analog	- MLPP - Secure Voice (STU-III & STE)
Tactical Network Gateway	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	- MLPP - Non-secure Voice
	PCM-30 E1 HDB3 CAS MFR1	
Analog E&M Signaling Type I		
NATO Gateway	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	Not tested	See note 2.
Commercial Network Gateway	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	Same Interfaces and Signaling as DSN	See note 3.
Legend: 10BaseT - Ethernet Based Operation, Twisted Pair AMI - Alternate Mark Inversion ANSI - American National Standards Institute B8ZS - Bipolar Eight Zero Substitution BRI - Basic Rate Interface CAS - Channel Associated Signaling CAT - Category DP - Dial Pulse DSN - Defense Switched Network DTMF - Dual Tone Multi-Frequency E1 - European Basic Multiplex Rate (2.048 Mbps) E&M - Ear and Mouth EIA - Electronic Industries Alliance EKTS - Electronic Key Telephone Service ESF - Extended Superframe FAX - Facsimile GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan HDB3 - High Density Bi-polar Three IEEE - Institute of Electrical and Electronic Engineering Inc. ISDN - Integrated Services Digital Network kbps - kilobits per second Mbps - Megabits per second MFR1 - Multi-Frequency R1 MLPP - Multi-Level Precedence and Preemption NATO - North Atlantic Treaty Organization NX56 - Data format restricted to multiples of 56K NX64 - Data format restricted to multiples of 64K PCM-24 - Pulse Code Modulation 24 Channels PCM-30 - Pulse Code Modulation 30 Channels PRI - Primary Rate Interface SF - Superframe ST - ISDN BRI Four-Wire Interface STE - Secure Terminal Equipment STU-III - Secure Telephone Unit-III SUT - System Under Test T1 - Digital Transmission Link level 1 (1.544 Mbps) TCP/IP - Transmission Control Protocol/Internet Protocol TPC - Twisted Pair Copper U - ISDN BRI Two-Wire Interface VTC - Video Teleconferencing Y2K - Year 2000		
Notes: 1 SUT meets all the GSCR exchange requirements for attendant services with the following console: Lucent Attendant Console Model 302C. 2 NATO interface requirements are in accordance with the GSCR paragraph 10.8. Not all switches are required to perform this function. 3 The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" items listed in appendix E of the GSTP specified in tables 2-1 through 2-15 of the GSCR.		

5. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system -- ERD uses unclassified (NIPRNET) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNET at <https://stp.fhu.disa.mil/>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNET), or <http://199.208.204.125/>

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(SIPRNET). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>.

6. The JITC point of contact is Mr. John Gese, DSN 879-5164 commercial (520) 538-5164, FAX DSN 879-4347 or e-mail to gesej@fhu.disa.mil.

2 Enclosures:	LESLIE F. CLAUDIO
1 Additional References	Chief
2 Certification Testing Summary	Networks, Transmission and Integration Division

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ADDITIONAL REFERENCES

- (c) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Switch Network Management Interface," 26 July 2001
- (d) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Network Management Requirements for End Offices," 2 August 2001
- (e) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01B, "Policy for Department of Defense Voice Services," 23 September 2001
- (f) Defense Information Systems Agency (DISA), Joint Interoperability and Engineering Organization (JIEO), Technical Report 8249, "Defense Information Systems Network (DISN) Circuit Switched Subsystem, Defense Switched Network (DSN) Generic Switching Center Requirements (GSCR)," March 1997
- (g) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Global Network Requirements for Tandem (Standalone), Multifunction, End Office, and Small End Office Switches," 30 January 2003
- (h) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP)," 17 June 1999

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. Avaya MultiVantage S8700 Digital Switching System with Software Release R011x.7585.7.0.2 (hereafter referred to as the system under test [SUT]).

2. PROPONENT. Defense Information Systems Agency (DISA).

3. PROGRAM MANAGER. Mr. Howard Osman, NS53, Room 5W23, 5275 Leesburg Pike, Falls Church, VA 22041, E-mail: Osmanh@ncr.disa.mil.

4. TESTERS. Joint Interoperability Test Command (JITC), Fort Huachuca, AZ.

5. SYSTEM UNDER TEST DESCRIPTION. The Avaya Digital Switching System product line in addition to the MultiVantage S8700 includes the DEFINITY G3R and the G3SI. The Avaya DEFINITY G3R and G3SI digital switching systems employs the same software and trunk/line card hardware as the SUT; JITC analysis determined the G3R and G3SI to be functionally identical for interoperability certification purposes. The switching systems and their respective software releases covered under this certification are listed in table 2-1. These two platforms utilize the same software and trunk/line card hardware as the SUT, and were developed to satisfy scalability requirements. The Avaya switch product line offers a Remote Switch Unit (RSU) capability referred to as the Survivable Remote Processor Expansion Port Network. This product line also offers a Voice over Internet Protocol capability. Preliminary testing was performed on these capabilities, but neither is covered by this certification. Avaya's DEFINITY G3R and G3SI digital switching systems are currently in use within the Defense Information Systems Network (DISN) providing Small End Office (SMEO) Switch and Private Branch Exchange (PBX) functionality. If a switch satisfies SMEO criteria, it will satisfy the lesser standards of a PBX.

6. OPERATIONAL ARCHITECTURE. The Generic Switching Center Requirements (GSCR) operational Defense Switched Network (DSN) Architecture is depicted in figure 2-1.

Table 2-1. Certified Avaya DEFINITY Software Releases

Software Release	Software Medium	Switch Platform
R011x.7585.7.0.2 (See note)	Optical Disk	MultiVantage S8700
R011r.7585.7.0.2 (See note)	Optical Disk	DEFINITY G3R
R011i.7585.7.0.2 (See note)	PCMCIA	DEFINITY G3SI
Legend: PCMCIA – Personal Computer Memory Card International Association Note: The software is the same; however, Avaya distinguishes the different mediums and platforms by the 5 th character of the Software Release (e.g. x, r, i).		

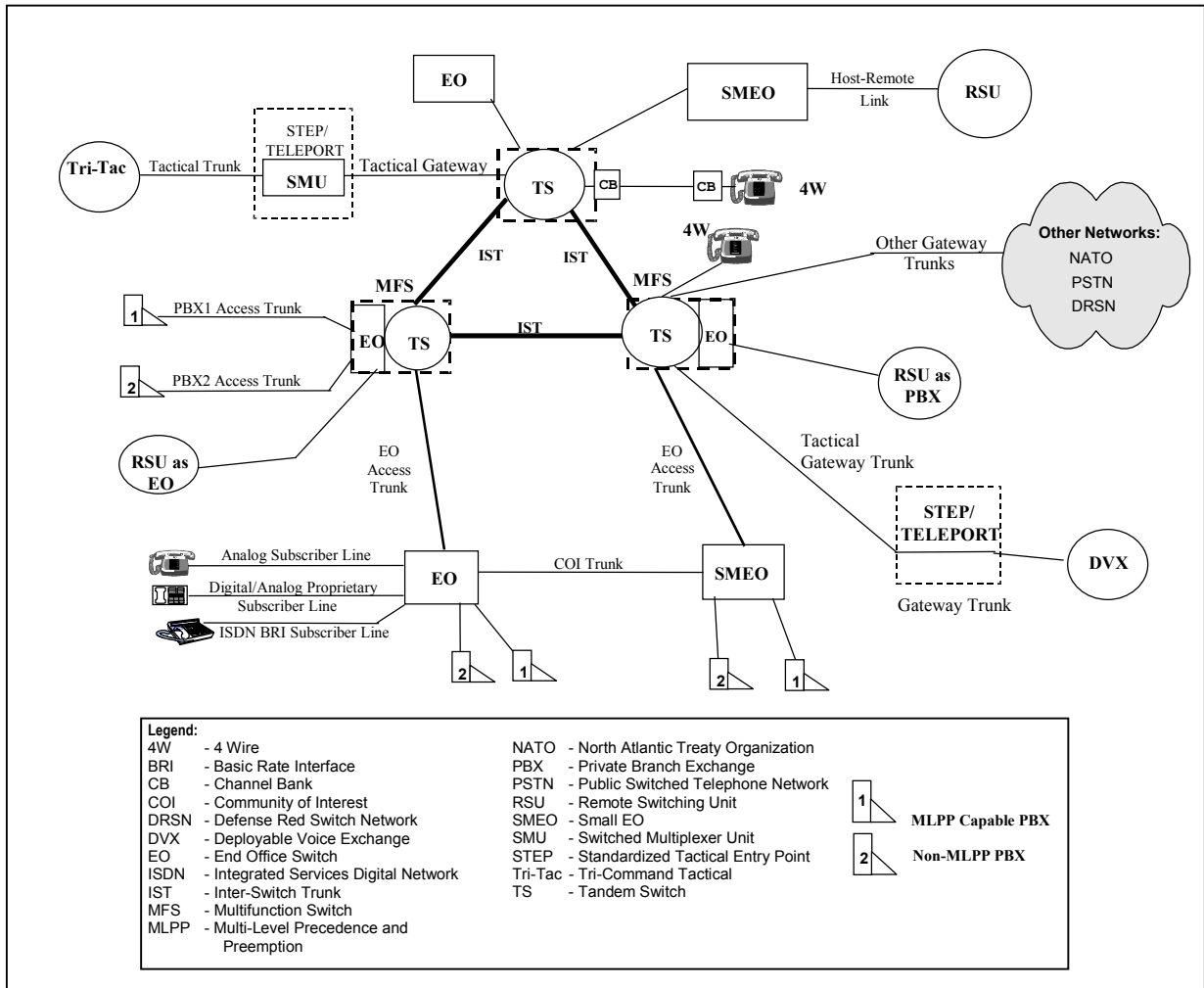


Figure 2-1. DSN Architecture

7. REQUIRED SYSTEM INTERFACES. This interoperability test status is based upon evaluation of the network interfaces as specified in:

a. The Chairman of the Joint Chiefs of Staff (CJCS) policy for Department of Defense voice services: DSN, Defense Red Switch Network (DRSN) Gateway, Tactical Network Gateway, North Atlantic Treaty Organization (NATO) Gateway, and Commercial Network Gateway.

b. Interface and signaling requirements for trunk, line, and network management derived from the GSCR document.

c. Interoperability Exchange Requirements (ERs) and Functional Requirements (FRs) derived from the GSCR.

d. The overall system interoperability performance.

The ERs and FRs for the CJCS network interfaces are indicated in table 2-2. The criticality and certification status of these interfaces can be found in paragraph 11. The test summary can be found in paragraph 11b.

Table 2-2. Exchange and Functional Requirements

	Trunk Interfaces		
	Interface & Signaling	Critical	Exchange and Functional Requirements
Defense Switched Network	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	Yes	<ul style="list-style-type: none"> - MLPP - Hotline Services - System Interface <ul style="list-style-type: none"> • Non-secure Voice and Data • Secure Voice and Data (STU-III and STE) • NX56 kbps and NX64 kbps Synchronous Data • Non-secure and Secure FAX • VTC • Alarms - Integrated Services Digital Network (ISDN PRI only) - Attendant Services¹ - System Administration, Measurements, and Service Standards - Y2K (Rollover, Valid and Invalid Dates) - Screening, Zone Restriction, and DSN Access Restriction - Automated Message Accounting - Network Integration - Common Data Channel (T1 and E1 CAS only) - ANSI T1.619a (T1 ISDN PRI only)
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	Yes	
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP	Yes	
	PCM-30 E1 CAS HDB3 MFR1	No	
	PCM-24 T1 B8ZS/ESF ISDN PRI	Yes	
	Analog E&M Signaling Type I	No	

Table 2-2. Exchange and Functional Requirements (continued)

Defense Switched Network (continued)	Line Interfaces		
	Interface & Signaling	Critical	Exchange and Functional Requirements
	TPC ISDN BRI ST and U Interface Q.931	Yes	<ul style="list-style-type: none">- MLPP- Hotline Services- ANSI T1.619a- ISDN Supplemental Services- Call Treatments- DSN Announcements- Attendant Services¹- EKTS- VTC- NX56 kbps and NX64 kbps Synchronous Data- Non-secure Voice and Data- Secure Voice and Data (STE)
	TPC 2-Wire analog	Yes	<ul style="list-style-type: none">- MLPP- Hotline Services- DSN Announcements- Traffic Measurements- Attendant Services¹- Call Treatments- Non-secure Voice and Data- Non-secure and Secure FAX- Secure Voice and Data (STU-III and STE)
	TPC 2-Wire Digital and Analog (Proprietary)	No	<ul style="list-style-type: none">- MLPP- Hotline Services- DSN Announcements- Traffic Measurements- Attendant Services¹- Call Treatments- Non-secure Voice
	Network Management Interfaces		
	Interface & Signaling	Critical	Exchange and Functional Requirements
	CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP	No	<ul style="list-style-type: none">- Automated Message Accounting- Traffic Measurements- Alarms (<i>TCP/IP interface only</i>)- Man Machine Language
	TPC EIA232 Asynchronous @ 9.6 kbps	No	
Defense Red Switch Network Gateway	Trunk Interfaces		
	Interface & Signaling	Critical	Exchange and Functional Requirements
	2-Wire Analog Loop	Yes	<ul style="list-style-type: none">- MLPP- Secure Voice

Table 2-2. Exchange and Functional Requirements (continued)

Tactical Network Gateway	Trunk Interfaces																																																																																						
	Interface & Signaling	Critical	Exchange and Functional Requirements																																																																																				
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	No	<ul style="list-style-type: none"> - MLPP - Non-secure Voice 																																																																																				
	PCM-30 E1 HDB3 CAS MFR1	No																																																																																					
	Analog E&M Signaling Type I	No																																																																																					
NATO Gateway	Interface & Signaling	Critical	Exchange and Functional Requirements																																																																																				
	Not tested	No	See note 2.																																																																																				
Commercial Network Gateway	Interface & Signaling	Critical	Exchange and Functional Requirements																																																																																				
	Same Interfaces and Signaling as DSN	Yes	See note 3.																																																																																				
<p>Legend:</p> <table> <tr> <td>10BaseT</td><td>- Ethernet Based Operation, Twisted Pair</td> <td>Mbps</td><td>- Megabits per second</td> </tr> <tr> <td>AMI</td><td>- Alternate Mark Inversion</td> <td>MFR1</td><td>- Multi-Frequency R1</td> </tr> <tr> <td>ANSI</td><td>- American National Standards Institute</td> <td>MLPP</td><td>- Multi-Level Precedence and Preemption</td> </tr> <tr> <td>B8ZS</td><td>- Bipolar Eight Zero Substitution</td> <td>NATO</td><td>- North Atlantic Treaty Organization</td> </tr> <tr> <td>BRI</td><td>- Basic Rate Interface</td> <td>NX56</td><td>- Data format restricted to multiples of 56K</td> </tr> <tr> <td>CAS</td><td>- Channel Associated Signaling</td> <td>NX64</td><td>- Data format restricted to multiples of 64K</td> </tr> <tr> <td>CAT</td><td>- Category</td> <td>PCM-24</td><td>- Pulse Code Modulation 24 Channels</td> </tr> <tr> <td>DP</td><td>- Dial Pulse</td> <td>PCM-30</td><td>- Pulse Code Modulation 30 Channels</td> </tr> <tr> <td>DSN</td><td>- Defense Switched Network</td> <td>PRI</td><td>- Primary Rate Interface</td> </tr> <tr> <td>DTMF</td><td>- Dual Tone Multi-Frequency</td> <td>SF</td><td>- Superframe</td> </tr> <tr> <td>E1</td><td>- European Basic Rate (2.048 Mbps)</td> <td>ST</td><td>- ISDN BRI Four-Wire Interface</td> </tr> <tr> <td>E&M</td><td>- Ear and Mouth</td> <td>STE</td><td>- Secure Terminal Equipment</td> </tr> <tr> <td>EKTS</td><td>- Electronic Key Telephone Service</td> <td>STU-III</td><td>- Secure Telephone Unit III</td> </tr> <tr> <td>ESF</td><td>- Extended Superframe</td> <td>SUT</td><td>- System Under Test</td> </tr> <tr> <td>FAX</td><td>- Facsimile</td> <td>T1</td><td>- Digital Transmission Link level 1 (1.544 Mbps)</td> </tr> <tr> <td>GSCR</td><td>- Generic Switching Center Requirements</td> <td>TCP/IP</td><td>- Transmission Control Protocol/Internet Protocol</td> </tr> <tr> <td>GSTP</td><td>- Generic Switch Test Plan</td> <td>TPC</td><td>- Twisted Pair Copper</td> </tr> <tr> <td>HDB3</td><td>- High Density Bipolar Three</td> <td>U</td><td>- ISDN BRI Two-Wire Interface</td> </tr> <tr> <td>IEEE</td><td>- Institute of Electrical and Electronics Engineers, Inc.</td> <td>VTC</td><td>- Video Teleconferencing</td> </tr> <tr> <td>ISDN</td><td>- Integrated Services Digital Network</td> <td>Y2K</td><td>- Year 2000</td> </tr> <tr> <td>kbps</td><td>- kilobits per second</td><td></td><td></td> </tr> </table> <p>Notes:</p> <p>1 SUT meets all the GSCR exchange requirements for attendant services with the following console: Lucent Attendant Console Model 302C.</p> <p>2 NATO interface requirements are in accordance with the GSCR paragraph 10.8. Not all switches are required to perform this function.</p> <p>3 The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" items listed in appendix E of the GSTP specified in tables 2-1 through 2-15 of the GSCR.</p>				10BaseT	- Ethernet Based Operation, Twisted Pair	Mbps	- Megabits per second	AMI	- Alternate Mark Inversion	MFR1	- Multi-Frequency R1	ANSI	- American National Standards Institute	MLPP	- Multi-Level Precedence and Preemption	B8ZS	- Bipolar Eight Zero Substitution	NATO	- North Atlantic Treaty Organization	BRI	- Basic Rate Interface	NX56	- Data format restricted to multiples of 56K	CAS	- Channel Associated Signaling	NX64	- Data format restricted to multiples of 64K	CAT	- Category	PCM-24	- Pulse Code Modulation 24 Channels	DP	- Dial Pulse	PCM-30	- Pulse Code Modulation 30 Channels	DSN	- Defense Switched Network	PRI	- Primary Rate Interface	DTMF	- Dual Tone Multi-Frequency	SF	- Superframe	E1	- European Basic Rate (2.048 Mbps)	ST	- ISDN BRI Four-Wire Interface	E&M	- Ear and Mouth	STE	- Secure Terminal Equipment	EKTS	- Electronic Key Telephone Service	STU-III	- Secure Telephone Unit III	ESF	- Extended Superframe	SUT	- System Under Test	FAX	- Facsimile	T1	- Digital Transmission Link level 1 (1.544 Mbps)	GSCR	- Generic Switching Center Requirements	TCP/IP	- Transmission Control Protocol/Internet Protocol	GSTP	- Generic Switch Test Plan	TPC	- Twisted Pair Copper	HDB3	- High Density Bipolar Three	U	- ISDN BRI Two-Wire Interface	IEEE	- Institute of Electrical and Electronics Engineers, Inc.	VTC	- Video Teleconferencing	ISDN	- Integrated Services Digital Network	Y2K	- Year 2000	kbps	- kilobits per second		
10BaseT	- Ethernet Based Operation, Twisted Pair	Mbps	- Megabits per second																																																																																				
AMI	- Alternate Mark Inversion	MFR1	- Multi-Frequency R1																																																																																				
ANSI	- American National Standards Institute	MLPP	- Multi-Level Precedence and Preemption																																																																																				
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EKTS	- Electronic Key Telephone Service	STU-III	- Secure Telephone Unit III																																																																																				
ESF	- Extended Superframe	SUT	- System Under Test																																																																																				
FAX	- Facsimile	T1	- Digital Transmission Link level 1 (1.544 Mbps)																																																																																				
GSCR	- Generic Switching Center Requirements	TCP/IP	- Transmission Control Protocol/Internet Protocol																																																																																				
GSTP	- Generic Switch Test Plan	TPC	- Twisted Pair Copper																																																																																				
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IEEE	- Institute of Electrical and Electronics Engineers, Inc.	VTC	- Video Teleconferencing																																																																																				
ISDN	- Integrated Services Digital Network	Y2K	- Year 2000																																																																																				
kbps	- kilobits per second																																																																																						

8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC's Network Engineering and Integration Laboratory in a manner and configuration similar to that of the DSN operational environment. This test was conducted using three test configurations shown in figures 2-2 through 2-4. Testing of the system's required functions and features were conducted using the test configuration depicted in figure 2-2, which accurately emulates the DSN operational environment. Network integration testing, which accurately emulates the DSN operational environment, was conducted using the test configuration depicted in figure 2-3. Figure 2-4 depicts the test configuration used to test the Advanced Defense Switched Network Integrated Management Support System network management required functions and features.

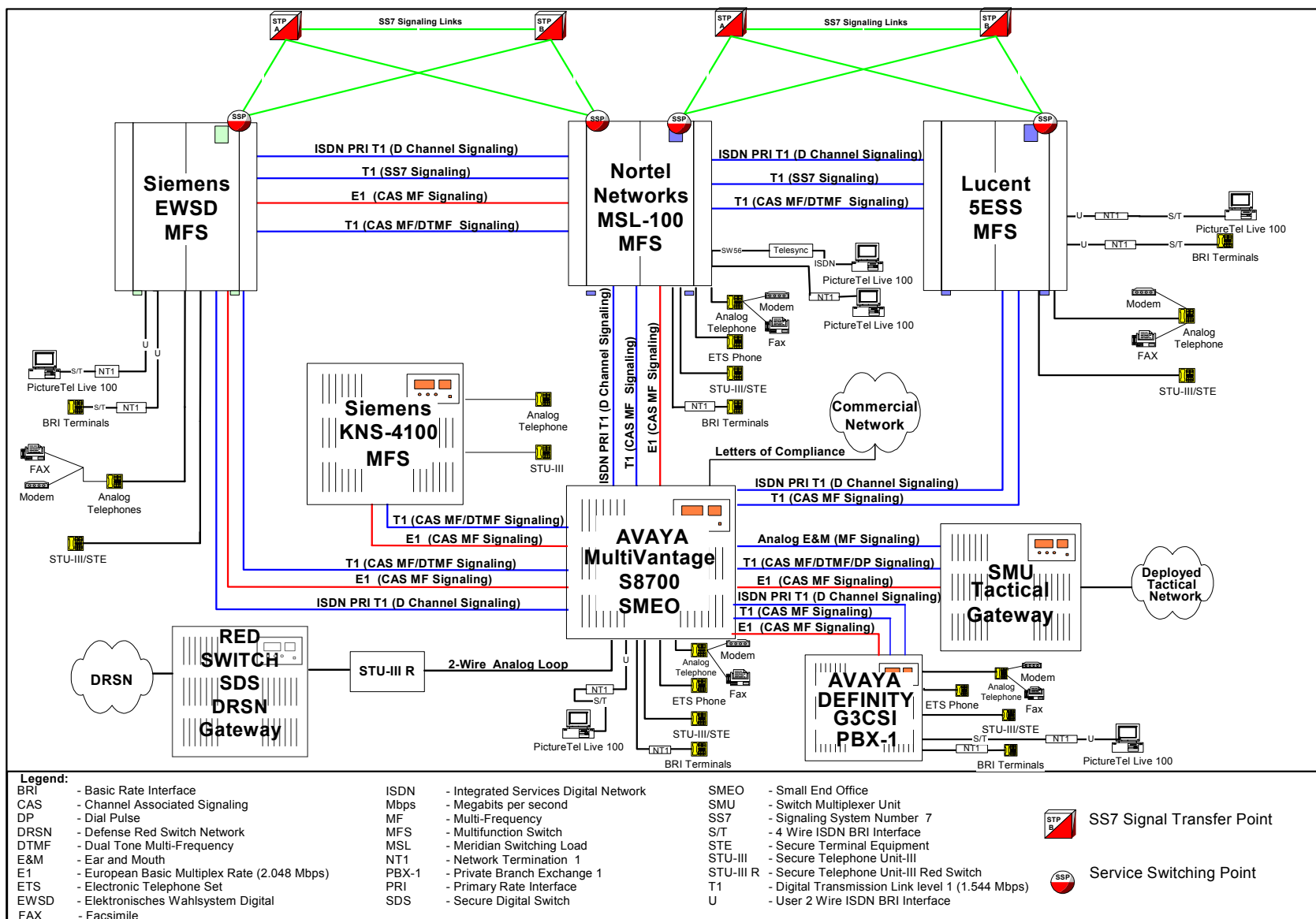


Figure 2-2. Test Configuration

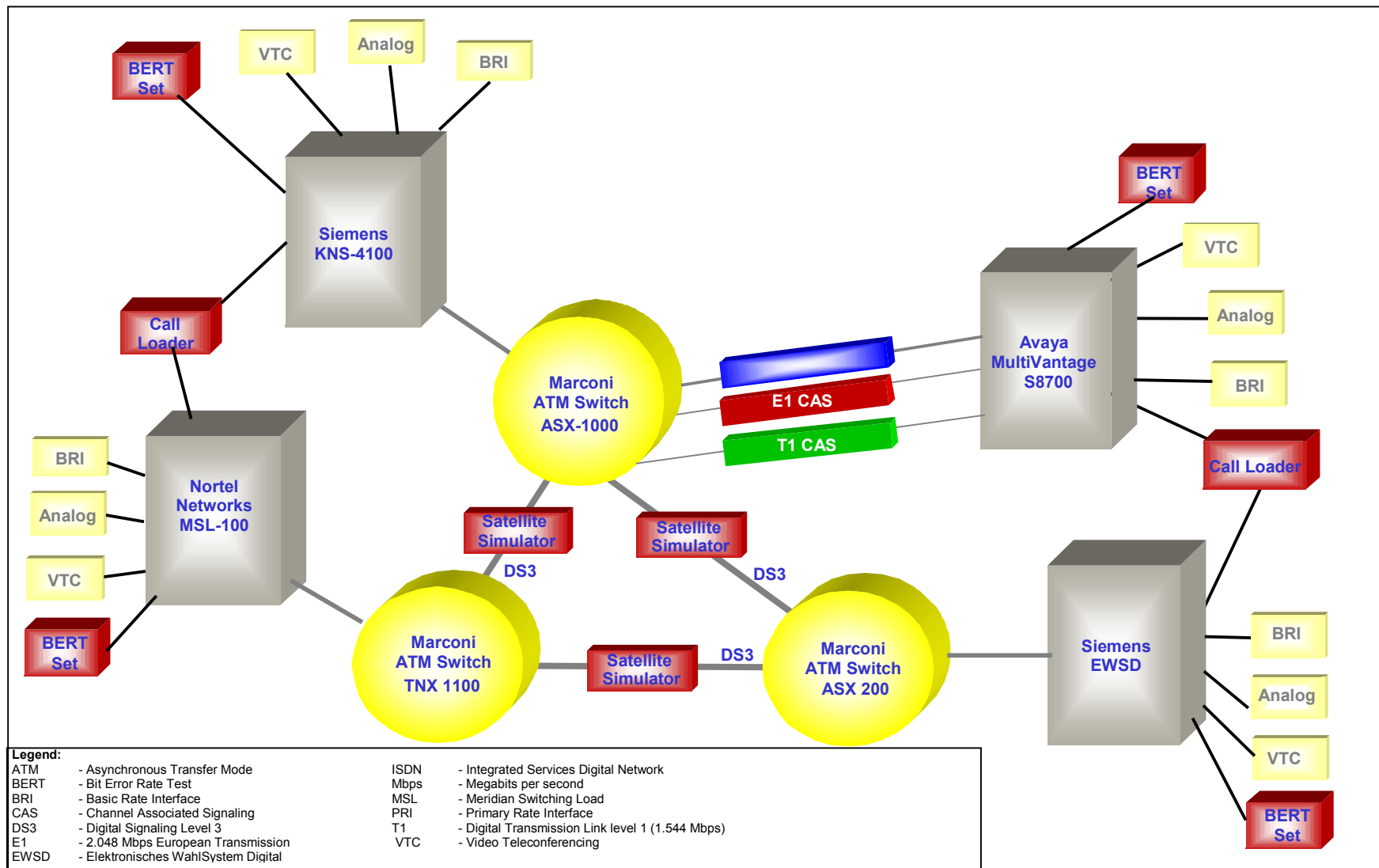
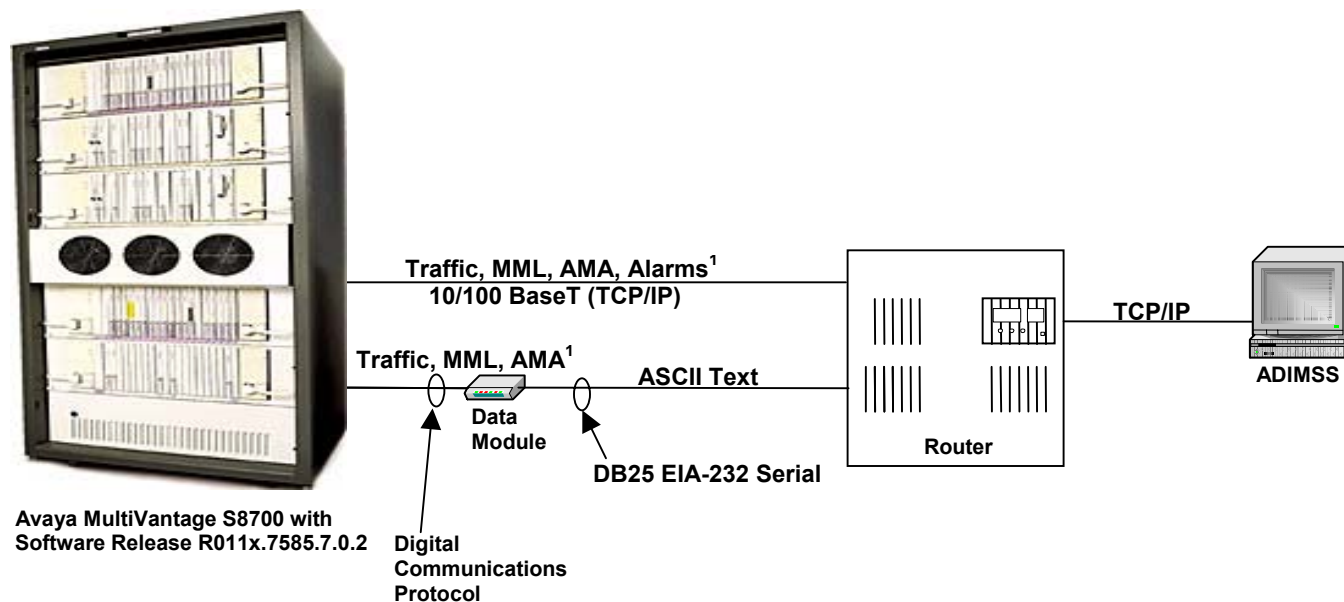


Figure 2-3. Network Integration Test Configuration



Legend:

10/100 BaseT	- Ethernet Baseband Operation, Twisted Pair
ADIMSS	- Advanced Defense Switched Network Integrated Management Support System
Alarms	- Fault Management
AMA	- Automated Message Accounting (Accounting Management)
ASCII	- American Standard Code for Information Interchange
DB	- "D" describes the shape of the housing, "B" describes the size of the housing
DSN	- Defense Switched Network
EIA	- Electronic Industries Alliance
MML	- Man Machine Language (Remote access to switch)
TCP/IP	- Transmission Control Protocol/Internet Protocol
Traffic	- Performance Management

Note:

¹ DSN Switch Network Management Interfaces as described in reference (h) and Network Management Requirements for End Offices as described in reference (c).

Figure 2-4. Avaya MultiVantage S8700 ADIMSS Network Management System Interface

9. SYSTEM CONFIGURATIONS. Table 2-3 provides the system configurations used in the test.

Table 2-3. Tested System Configurations

System Name	Software Release
Nortel Networks MSL-100	MSL-17
Avaya MultiVantage S8700	R011x.7585.7.0.2
Avaya DEFINITY G3R	R011r.7585.7.0.2
Avaya DEFINITY G3SI	R011i.7585.7.0.2
Avaya DEFINITY G3CSI, ProLogix	R011i.7585.7.0.2
Siemens EWSD	19d with Patch Set 32
Siemens KNS-4100	APS4V2.3
Lucent 5ESS	5E15
SMU 96 Tactical Gateway	RD302185
Tekelec STP	23.1
Nortel Networks Broad Band STP	3.0.3.18d
DSS Red Switch	8.03
MARCONI ATM switches	Versions 6.2 and 7.1
Legend: ATM - Asynchronous Transfer Mode CP - Central Processor DSS - Digital Small Switch EWSD - Elektronisches Wahlsystem Digital MSL - Meridian Switching Load RISC - Reduced Instruction Set Computer SMU - Switch Multiplexer Unit STP - Signal Transfer Point	

10. TESTING LIMITATIONS. None

11. TEST RESULTS. Tables 2-4 through 2-9 synopsise the SUT interface ER and FR status and criticality. The identified test discrepancies shown below denote only those test discrepancies that remained open after software patches were applied and regression testing was completed. A detailed description of these discrepancies can be found in paragraph 11a.

Table 2-4. Defense Switched Network Trunk Interface and Exchange Requirements

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 CAS (B8ZS/ESF) (AMI/SF) DTMF	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	No	Met
		System Interface (Alarms, non-secure voice and data, secure voice and data, FAX, VTC)	No	II-4.2	10.1 through 10.12	Yes	Met
		Attendant Services	No	II-7.2	2.1.3	No	Met ¹
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	Yes	Met
		Y2K (Rollover, Valid, Invalid) Dates	No	II-9.2, II-10.2, II-11.2	9.1	Yes	Met
		Screening, Zone Restriction, and DSN Access Restriction	No	II-12.2	5.3.4	Yes	Met
		AMA	No	II-14.2	8.1	Yes	Met
		Network Integration	No	II-20.2	10	Yes	Met
		CDC	No	II-24.2	See Note	No	Met ²

Table 2-4. Defense Switched Network Trunk Interface and Exchange Requirements (continued)

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 CAS (B8ZS/ESF) (AMI/SF) MFR1	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	No	Met
		System Interface (Alarms, non-secure voice and data, secure voice and data, FAX, VTC)	No	II-4.2	10.1 through 10.12	Yes	Met
		Attendant Services	No	II-7.2	2.1.3	No	Met ¹
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	Yes	Met
		Y2K (Rollover, Valid, Invalid) Dates	No	II-9.2, II-10.2, II-11.2	9.1	Yes	Met
		Screening, Zone Restriction, and DSN Access Restriction	No	II-12.2	5.3.4	Yes	Met
		AMA	No	II-14.2	8.1	Yes	Met
		Network Integration	No	II-20.2	10	Yes	Met
		CDC	No	II-24.2	See note 2	No	Met ²

Table 2-4. Defense Switched Network Trunk Interface and Exchange Requirements (continued)

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 CAS (B8ZS/ESF) (AMI/SF) DP	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	No	Met
		System Interface (Alarms, non-secure voice and data, secure voice and data, FAX, VTC)	No	II-4.2	10.1 through 10.12	Yes	Met
		Attendant Services	No	II-7.2	2.1.3	No	Met ¹
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	Yes	Met
		Y2K (Rollover, Valid, Invalid) Dates	No	II-9.2, II-10.2, II-11.2	9.1	Yes	Met
		Screening, Zone Restriction, and DSN Access Restriction	No	II-12.2	5.3.4	Yes	Met
		AMA	No	II-14.2	8.1	Yes	Met
		Network Integration	No	II-20.2	10	Yes	Met
		CDC	No	II-24.2	See Note	No	Met ²

Table 2-4. Defense Switched Network Trunk Interface and Exchange Requirements (continued)

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-30 E1 CAS HDB3 MFR1	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	No	Met
		System Interface (Alarms, non-secure voice and data, secure voice and data, FAX, VTC)	No	II-4.2	10.1 through 10.12	Yes	Met
		Attendant Services	No	II-7.2	2.1.3	No	Met ¹
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	Yes	Met
		Y2K (Rollover, Valid, Invalid) Dates	No	II-9.2, II-10.2, II-11.2	9.1	Yes	Met
		Screening, Zone Restriction, and DSN Access Restriction	No	II-12.2	5.3.4	Yes	Met
		AMA	No	II-14.2	8.1	Yes	Met
		Network Integration	No	II-20.2	10	Yes	Met
		CDC	No	II-24.2	See Note	No	Met ²

Table 2-4. Defense Switched Network Trunk Interface and Exchange Requirements (continued)

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 CCS (B8ZS/ESF) ISDN	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	No	Met
		System Interface (Alarms, non-secure voice and data, secure voice and data, FAX, VTC)	No	II-4.2	10.1 through 10.12	Yes	Met
		ISDN	No	II-6.2	6.6, 21.1, 21.2, 21.3	Yes	Met
		Attendant Services	No	II-7.2	2.1.3	No	Met ¹
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	Yes	Met
		Y2K (Rollover, Valid, Invalid) Dates	No	II-9.2, II-10.2, II-11.2	9.1	Yes	Met
		Screening, Zone Restriction, and DSN Access Restriction	No	II-12.2	5.3.4	Yes	Met
		AMA	No	II-14.2	8.1	Yes	Met
		Network Integration	No	II-20.2	10	Yes	Met
		ANSI T1.619a	Yes	II-6.2	21.3.1	Yes	Met ³

Table 2-4. Defense Switched Network Trunk Interface and Exchange Requirements (continued)

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
Analog E&M Signaling Type I	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	No	Met
		System Interface (Alarms, non-secure voice and data, secure voice and data, FAX, VTC)	No	II-4.2	10.1 through 10.12	Yes	Met
		Attendant Services	No	II-7.2	2.1.3	No	Met ¹
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	Yes	Met
		Y2K (Rollover, Valid, Invalid) Dates	No	II-9.2, II-10.2, II-11.2	9.1	Yes	Met
		Screening, Zone Restriction, and DSN Access Restriction	No	II-12.2	5.3.4	Yes	Met
		AMA	No	II-14.2	8.1	Yes	Met
		Network Integration	No	II-20.2	10	Yes	Met

Table 2-4. Defense Switched Network Trunk Interface and Exchange Requirements (continued)

Legend:		
AMA - Automated Message Accounting	E1 - European Basic Multiplex Rate (2.048 Mbps)	Mbps - Megabits per second
AMI - Alternate Mark Inversion	E&M - Ear and Mouth	MFR1 - Multi-Frequency R1
ANSI - American National Standards Institute	ER - Exchange Requirements	MLPP - Multi-Level Precedence and Preemption
B8ZS - Bipolar Eight Zero Substitution	ESF - Extended Superframe	PCM - Pulse Code Modulation
CAS - Channel Associated Signaling	FAX - Facsimile	SF - Superframe
CDC - Common Data Channel	FR - Functional Requirements	SUT - System Under Test
DISN - Defense Information Systems Network	GSCR - Generic Switching Center Requirements	T1 - Digital Transmission Link level 1 (1.544 Mbps)
DP - Dial Pulse	GSTP - Generic Switch Test Plan	VTC - Video Teleconferencing
DSN - Defense Switched Network	HDB3 - High Density Bi-Polar Three	Y2K - Year 2000
DTMF - Dual Tone Multiple-Frequency	ISDN - Integrated Services Digital Network	
Notes:		
1 SUT meets all the GSCR exchange requirements for attendant services with the following console: Lucent Attendant Console Model 302C.		
2 CDC is a requirement only for DISN-Europe. Switches that have a requirement to interface to the DSN European KNS-4100 switches must be capable of passing CDC traffic transparently.		
3 The SUT will not allow calls between unlike DSN service domains when resources are available. The SUT meets the minimum requirements defined in reference (g), and full compliance is not required until Oct 2003. The operational impact is minor.		

Table 2-5. Defense Switched Network Line Interface and Exchange Requirements

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
TPC, ISDN BRI ST and U, Q.931	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	No	Met
		ANSI T1.619a	Yes	II-6.2	21.3.1	Yes	Met ¹
		ISDN Supplemental Services	Yes	II-6.2	21.3	No	Not Met ²
		Attendant Services	No	II-7.2	2.1.3	No	Met ³
		Call Treatments	No	II-15.2	5.2.1.1, 5.2.2.1	Yes	Met
		DSN Announcements	Yes	II-19.2	5.6	Yes	Met ⁴
		Electronic Key Telephone Service	Yes	II-25.5	21.2	No	Met
2 Wire Analog, TPC	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	No	Met
		Attendant Services	No	II-7.2	2.1.3	No	Met ³
		Call Treatments	No	II-15.2	5.2.1.1, 5.2.2.1	Yes	Met
		DSN Announcements	Yes	II-19.2	5.6	Yes	Met ⁴

Table 2-5. Defense Switched Network Line Interface and Exchange Requirements (continued)

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
2 Wire Proprietary Digital	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	No	Met
		Attendant Services	No	II-7.2	2.1.3	No	Met ³
		Call Treatments	No	II-15.2	5.2.1.1, 5.2.2.1	Yes	Met
		DSN Announcements	Yes	II-19.2	5.6	Yes	Met ⁴
Legend: ANSI - American National Standards Institute BRI - Basic Rate Interface DSN - Defense Switched Network DISN - Defense Information Systems Network ER - Exchange Requirements FR - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan ISDN - Integrated Services Digital Network MLPP - Multi-Level Precedence and Preemption ST - 4 Wire Integrated Services Digital Network Basic Rate Interface SUT - System Under Test TPC - Twisted Pair Copper U - 2 Wire Integrated Services Digital Network Basic Rate Interface Notes: 1 SUT will not allow calls between unlike DSN service domains when resources are available. The SUT meets the minimum requirements defined in reference (g), and full compliance is not required until Oct 2003. The operational impact is minor. 2 ISDN Supplemental Services currently not used in the DSN. The operational impact is none. 3 SUT meets all the GSCR exchange requirements for attendant services with the following console: Lucent Attendant Console Model 302C. 4 Met all critical DSN Announcement requirements except for Isolation Code Announcement. The SUT provides this announcement only for precedence calls above ROUTINE. ROUTINE precedence calls receive a fast busy signal. The operational impact is minor.							

Table 2-6. Defense Switched Network Network Management Interface and Exchange Requirements

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
CAT 5 TPC, IEEE 802.3 10BaseT Ethernet, TCP/IP	Certified	AMA	No	II-23.2	2.1.10, 16.1	Yes	Met
		Alarms	No	II-23.2	2.1.10, 16.1	Yes	Met
		Traffic Measurements	No	II-23.2	2.1.10, 16.1	Yes	Met
		MML	No	II-23.2	2.1.10, 16.1	Yes	Met
TPC EIA232 Asynchronous @ 9.6 kpbs	Certified	AMA	No	II-23.2	2.1.10, 16.1	Yes	Met
		Traffic Measurements	No	II-23.2	2.1.10, 16.1	Yes	Met
		MML	No	II-23.2	2.1.10, 16.1	Yes	Met
X.25/BX.25		AMA	No	II-23.2	2.1.10, 16.1	No	Not Tested
		Alarms	No	II-23.2	2.1.10, 16.1	No	Not Tested
		Traffic Measurements	No	II-23.2	2.1.10, 16.1	No	Not Tested
		MML	No	II-23.2	2.1.10, 16.1	No	Not Tested
Legend: 10BaseT - 10 megabits per second Ethernet twisted pair AMA - Automated Message Accounting CAT - Category 5 cable (rated @ 100 megahertz of bandwidth) EIA - Electronic Industries Alliance ER - Exchange Requirements FR - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan IEEE - Institute of Electrical and Electronic Engineering Inc. kbps - kilobits per second MML - Man Machine Language TPC - Twisted Pair Copper TCP/IP - Transmission Control Protocol/Internet Protocol							

Table 2-7. Defense Red Switch Network Gateway Interface and Exchange Requirements

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
TPC 2-Wire analog	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4	Yes	Met
		Secure Voice (STU-III, STE)	No	NA	2.2.1, 5.3.4	Yes	Met
Legend: ER - Exchange Requirements FR - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan MLPP - Multi-Level Precedence and Preemption STE - Secure Terminal Equipment STU-III - Secure Telephone Unit-III TPC - Twisted Pair Copper							

Table 2-8. Tactical Network Gateway Interface and Exchange Requirements

Interface & Signaling		Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 (B8ZS/ESF) (AMI/SF) MFR1, DTMF		Certified	MLPP	No	II-2.2	2.2.1, 5.3.4	Yes	Met
PCM-30 E1 HDB3 CAS			Non-secure Voice	No	NA	2.2.1, 5.3.4	Yes	Met
Analog E&M Type I								
AMI	- Alternate Mark Inversion							
B8ZS	- Bipolar Eight Zero Substitution							
CAS	- Channel Associated Signaling							
DTMF	- Dual Tone Multi-Frequency							
E1	- European Basic Multiplex Rate (2.048 Mbps)							
E&M	- Ear and Mouth							
ER	- Exchange Requirements							
ESF	- Extended Superframe							
FR	- Functional Requirements							
GSCR	- Generic Switching Center Requirements							
GSTP	- Generic Switch Test Plan							
HDB3	- High Density Bipolar Three							
Mbps	- Megabits per second							
MFR1	- Multi-Frequency R1							
MLPP	- Multi-Level Precedence and Preemption							
PCM-24	- Pulse Code Modulation Twenty-Four channels							
PCM-30	- Pulse Code Modulation Thirty Channels							
SF	- Superframe							
T1	- Digital Transmission Link level 1 (1.544 Mbps)							

Table 2-9. Commercial Network Gateway Interface and Exchange Requirements

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
Same Interfaces Signaling as DSN	Certified	See Note	No	See Note	See Note	Yes	Met
Legend: DSN - Defense Switched Network ER - Exchange Requirements FR - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan Note: The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" items listed in appendix E of the GSTP specified in tables 2-1 through 2-15 of the GSCR.							

a. Discussion

(1) DSN. All critical interface ERs and FRs for DSN were met. The following minor exceptions are noted:

(a) The SUT will not allow calls between unlike DSN service domains when resources are available. The Avaya MultiVantage S8700 meets the minimum requirements defined in reference (d), and full compliance is not required until October 2003. The operational impact is minor.

(b) The SUT does not support the following unique Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) Supplemental Services as specified in the respective GSCR paragraphs listed below. There are currently no switches in the DISN that support ISDN BRI Supplemental Services. The operational impact is none.

- Conference Calling. GSCR Para. 21.3.2
- User-to-User Signaling. GSCR Para. 21.3.3
- Call Hold. GSCR Para. 21.3.4
- Call Waiting. GSCR Para. 21.3.5
- Normal Call Transfer. GSCR Para. 21.3.6
- Explicit Call Transfer. GSCR Para. 21.3.7
- ISDN Call Deflection. GSCR Para. 21.3.8
- Preset Conference Calling. GSCR Para. 21.3.11

(c) The SUT does not support the Isolation Code Announcement (ICA) for ROUTINE precedence calls. ROUTINE precedence calls receive a fast busy tone rather than the required ICA. The ICA is received by calls above ROUTINE precedence. The operational impact is minor.

(d) DSN Network Management (NM). The SUT meets all the exchange requirements for NM over Institute of Electrical and Electronic Engineering (IEEE) 802.3 (10BaseT Ethernet) Transmission Control Protocol/Internet Protocol (TCP/IP) and EIA232 asynchronous serial interfaces. It was verified that these interfaces pass required NM data elements per reference (c).

(e) RSU. The SUT RSU was tested in standalone and non-standalone modes. The RSU, when connected to the SUT Host, is treated similar to a SMEO. The same test procedures conducted on the SUT Host subscribers were also conducted on the RSU subscribers. The RSU did not meet the critical interoperability certification requirements and is, therefore, not certified for joint use in the DISN.

(2) DRSN Gateway. All critical interface ERs and FRs for the DRSN gateway were met.

(3) Tactical Gateway. All critical interface ERs and FRs for the tactical gateway were met.

(4) NATO Gateway. The NATO Gateway interfaces were not tested.

(5) Commercial Gateway. The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" items listed in appendix E of the Generic Switch Test Plan, specified in tables 2-1 through 2-15 of the GSCR, with minor exceptions. Exceptions were reviewed and assessed by the DISA, Network Services (NS) 53, the Development and Operational Engineering Department, and determined to have a minor operational impact.

b. Test Summary. The Avaya MultiVantage S8700, DEFINITY G3R and G3SI Digital Switching Systems with their associated software releases listed in table 2-1, are certified for joint use in the DISN, in accordance with the requirements set forth in the GSCR. Minor discrepancies identified during testing and the GSCR requirements not tested will have no adverse operational impact. The interoperability summary and status to include criticality for each interface is shown in tables 2-9 and 2-10.

12. TEST AND ANALYSIS REPORT. No detailed test report was developed per the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system -- ERD uses unclassified (NIPRNET) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNET at <https://stp.fhu.disa.mil/>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNET), or <http://199.208.204.125/> (SIPRNET). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>.

Table 2-10. Avaya MultiVantage S8700, DEFINITY G3R, and G3SI Digital Switching Systems Interoperability Summary

Network	Status	Remarks
DSN	Certified	<ul style="list-style-type: none">- VoIP not certified- Certified as SMEO & PBX1- RSU not certified- E1 CAS and CDC certified (DISN-E only)- The identified test discrepancies listed in enclosure 2 that remained opened have an overall operational impact of minor.
DRSN Gateway	Certified	
Tactical Gateway	Certified	
NATO Gateway	Not Tested	
Commercial Gateway	Certified	

Table 2-10. Avaya MultiVantage S8700, DEFINITY G3R, and G3SI Digital Switching Systems Interoperability Summary (continued)

Legend:			
CAS	– Channel Associated Signaling	NATO	– North Atlantic Treaty Organization
CDC	– Common Data Channel	PBX1	– Private Branch Exchange 1
DRSN	– Defense Red Switch Network	RSU	– Remote Switching Unit
DISN-E	– Defense Information System Network Europe	SMEO	– Small End Office
DSN	– Defense Switched Network	T1	– Digital Transmission Link level 1 (1.544 Mbps)
E1	– European Basic Rate (2.048 Mbps)	VoIP	– Voice over Internet Protocol
Mbps	– Megabits per second		

Table 2-11. Interoperability Status

	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
Defense Switched Network	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	Yes	Certified	Met all critical ERs and FRs.
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	Yes	Certified	Met all critical ERs and FRs.
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP	Yes	Certified	Met all critical ERs and FRs.
	PCM-30 E1 CAS HDB3 MFR1	Yes	Certified	Met all critical ERs and FRs.
	PCM-24 T1 (B8ZS/ESF) ISDN PRI	Yes	Certified	Met all critical ERs and FRs. Full compliance to the ANSI T1.619a requirement not met. ¹ Operational impact is minor.
	Analog E&M Signaling Type I	No	Certified	Met all critical ERs and FRs.
	Line Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	TPC ISDN BRI ST and U Interface Q.931	Yes	Certified	Met all critical ERs and FRs. ISDN Supplemental Services ² and full compliance of DSN Announcements ³ not met. Operational impact is minor.
	TPC 2-Wire analog	Yes	Certified	Met all critical ERs and FRs. Full compliance of DSN Announcements ³ not met. Operational impact is minor.
	TPC 2-Wire Digital (Proprietary)	No	Certified	Met all critical ERs and FRs. Full compliance of DSN Announcements ³ not met. Operational impact is minor.
	Network Management Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP	Yes	Certified	Met all critical ERs and FRs.
	TPC EIA232 Asynchronous @ 9.6 kbps	Yes	Certified	Met all critical ERs and FRs.
Defense Red Switch Network Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	2-Wire Analog Loop	Yes	Certified	Met all critical ERs and FRs.
Tactical Network Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	No	Certified	Met all critical ERs and FRs.
	PCM-30 E1 HDB3 CAS MFR1	No	Certified	Met all critical ERs and FRs.
	Analog E&M Signaling Type I	No	Certified	Met all critical ERs and FRs.

Table 2-11. Interoperability Status (continued)

NATO Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
		No	Not Tested	Operational impact is minor.
Commercial Network Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	Same Interfaces and Signaling as DSN	Yes	Certified	See note 4

Legend:

10BaseT - Ethernet Based Operation, Twisted Pair	GSTP - Generic Switch Test Plan
AMI - Alternate Mark Inversion	HDB3 - High Density Bi-polar Three
ANSI - American National Standards Institute	IEEE - Institute of Electrical and Electronic Engineering Inc.
B8ZS - Bipolar Eight Zero Substitution	ISDN - Integrated Services Digital Network
BRI - Basic Rate Interface	kbps - kilobits per second
CAS - Channel Associated Signaling	Mbps - Megabits per second
CAT - Category	MFR1 - Multi-Frequency R1
DP - Dial Pulse	NATO - North Atlantic Treaty Organization
DISN - Defense Information Systems Network	PCM-24 - Pulse Code Modulation 24 Channels
DSN - Defense Switched Network	PCM-30 - Pulse Code Modulation 30 Channels
DTMF - Dual Tone Multi-Frequency	PRI - Primary Rate Interface
E1 - European Basic Multiplex Rate (2.048 Mbps)	SF - Superframe
E&M - Ear and Mouth	ST - ISDN BRI Four-Wire Interface
EIA - Electronic Industries Alliance	SUT - System Under Test
ERs - Exchange Requirements	T1 - Digital Transmission Link level 1 (1.544 Mbps)
ESF - Extended Superframe	TPC - Twisted Pair Copper
FRs - Functional Requirements	TCP/IP - Transmission Control Protocol/Internet Protocol
GSCR - Generic Switching Center Requirements	U - ISDN BRI Two-Wire Interface

Notes:

- 1 The SUT will not allow calls between unlike DSN service domains when resources are available. The SUT meets the minimum requirements defined in reference (g), and full compliance is not required until Oct 2003. The operational impact is minor.
- 2 ISDN Supplemental Services currently not used in the DISN. The operational impact is minor.
- 3 Met all DSN Announcement requirements except for Isolation Code Announcement. The SUT provides this announcement only for precedence calls above ROUTINE. ROUTINE precedence calls receive a fast busy signal.
- 4 The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" items listed in appendix E of the GSTP specified in tables 2-1 through 2-15 of the GSCR.